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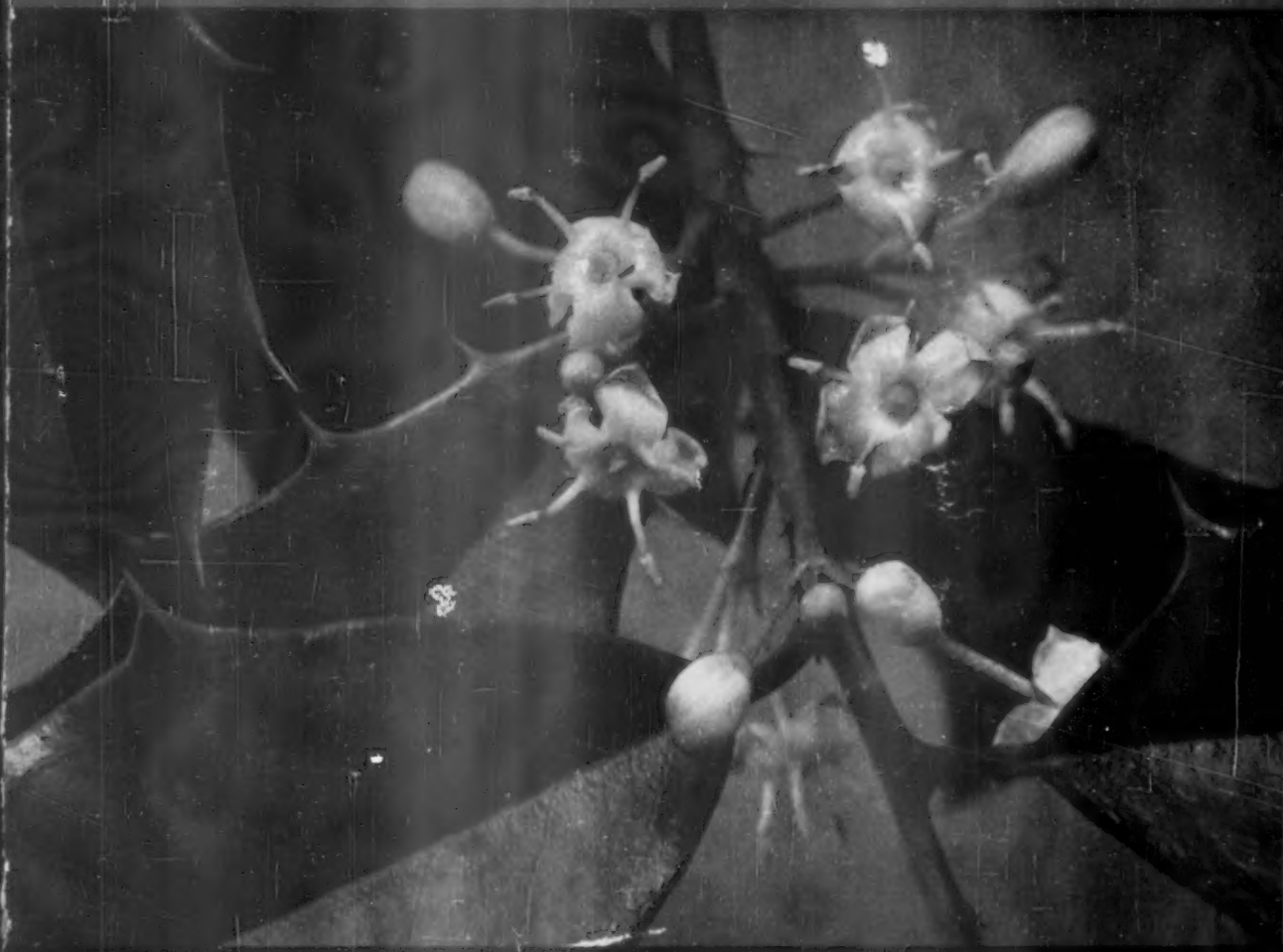
December 11, 1954

VOL. 44, NO. 24

PAGES 267-284

# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Promise of Christmas

See Page 378

A SCIENCE SERVICE PUBLICATION

# Kodak reports to laboratories on:

telling your story without jump or jerk... a new material for the base of our business

## Talking with film

There is a man in your trading area who calls himself an audio-visual dealer. This mid-20th-century addition to the roster of trades is a merchant of various devices for captivating a captive audience into granting access for your message to their minds through their eyes and ears. Assuming you have a message—most successful people nowadays have one—we point here to a new



and advanced example of one of the basic devices which your audio-visual man has for conveying it, the Kodaslide Signet 500 Projector, Film-strip Model.

First we ask you to grant that the smoother the mechanical aspects of your presentation, the less likely it is to distract your audience from your subject matter. Therefore we have proceeded on the assumption that the pictures should follow each other instantaneously, quietly, positively, without jumping, without jerking. Instead of holding a lot of engineering conferences on how to accomplish this without resorting to a costly Geneva movement, we went ahead and actually used the Geneva movement and then made the engineers figure out how they could still keep the selling price down to \$98.

And, since the customers were to be asked to lay their dough out for a projector, not just a Geneva movement, we had to insist on 1) sufficient brilliance and evenness of illumination to dispense with room darkening in most cases; 2) safeguarding

the filmstrip by automatic separation of the glass pressure plates before it can move; 3) fast setup by virtue of drop-in loading for immediate sprocket engagement, a quick framing lever, and a quick rewind device; 4) cool operation of a 500-w lamp with little or no blower noise and no danger of burning a hole in the film; 5) automatic leveling capable of compensating for unevenness of support.

All this they did, our engineers, muttering all the while that sales people are unreasonable; for they knew all along that not only were they expected to come up with a world-beater of a filmstrip machine but also that the \$98 package had to include a mechanism that the user could easily insert when he had Kodachrome slides to show!

To have the audio-visual man show you how well they fulfilled the assignment, drop a line to Eastman Kodak Company, Department 8-AV, Rochester 4, N. Y. As for how you prepare the filmstrips in the first place, you can ask in your note for a little pamphlet of helpful hints we call "Making Filmstrips With Amateur Equipment."

## P(olystyrene) B(ase)

The first Kodak film on a base other than cellulose ester is now on regular sale. This is an historic and portentous pronouncement only to those who have devoted their careers to the manufacture of photographic film. Those engaged in the preparation of full-color printed illustrations will be pleased, though possibly not set trembling with excitement over the news: using this new Kodalith Ortho PB Film, they will no longer have to turn to bulky glass plates to avoid register difficulties from the size change of film with relative humidity. Those interested in photography in a more general way may be curious to know what's up.

Kodalith Ortho PB Film has a .005" base of extruded polystyrene. This material is optically clear and

as free from visible blemishes as cellulose ester film had become about the time of the Harding administration.

Extruded polystyrene can be produced in rolls of the proper length and width for efficient emulsion coating. It can be held sufficiently uniform in thickness at the thickness required for proper strength, toughness, rigidity, and suitability as photographic film base.

None of which would justify turning to it but for the fact that when you coat a pelloid on it and then put a photographic emulsion on the other side and then cut it up and then expose it in a camera and then put it through sundry processing baths and then dry it and then store it through wide swings of temperature and humidity and then measure how much size change has occurred in the image it carries, you find it is about three times as dimensionally stable as cellulose ester film. Furthermore, what little change has occurred is the same in all directions.

Where we go from here we prefer not to say at the moment. (We have competitors.) The subject is far more complex than the finding of a dimensionally stable sheet plastic, for a plastic with gelatin bonded to it is a far different proposition mechanically from the same plastic by itself. Gelatin is doubtless the most exasperating structural material known to man. Under some conditions of extremely low humidity we have seen it develop enough pull to gouge glass. Fortunately, after 75 years of experience with it and almost as long with plastics, we've accumulated a few ideas and quite a few boys to work on them.

Anybody who has been looking for a high-contrast film that probably won't change dimension by more than 0.02% for a 10% change in relative humidity is invited to purchase a box of Kodalith Ortho PB Film from his Kodak Graphic Arts Dealer.

Price quoted is subject to change without notice.

**This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are... serving laboratories everywhere**

**Kodak**  
TRADE MARK

## PUBLIC HEALTH

# Clear Los Angeles Smog

The techniques for dealing with the Los Angeles smog are now available, and scientists close to the problem urge less talk and more action.

► THE KNOW-HOW to deal with Los Angeles smog problem is already available. Residents and officials of Los Angeles county should stop talking and start acting. That is the only way to get rid of future smog blankets, with their now-unknown effects on the health of millions of people.

These are the conclusions of scientists who have been working closely on the problem. In private discussions, the scientists said they are "extremely worried" about the smog's effects, from traffic and airplane accidents to health.

The problem is made more "difficult" because politics are involved. Not only are local, state and federal governments concerned, but during the election campaign, charges and counter-charges were being hurled at each other by Republicans and Democrats.

Added to the political struggles is the fact there seem to be "seventeen" different research groups" making studies of smog. Sometimes the results of their research will differ only in detail, yet this will give some an excuse to say the work should be repeated, the scientists charged.

There is already "lots of scientific know-how" available to deal with the problem, they said, but "you do not get results if research is an end in itself. The various committees now seem only to be measuring and making long-range programs."

Start closing something down now, even while making such measurements and planning such programs, is their advice. This may seem expensive now, but if costs of the especially needed equipment are amortized over several years, in some case as many as 30, the total expenditure would be only \$4,000,000 to \$5,000,000 a year.

This sum, the scientists pointed out, is not much more than is being spent annually for research on the smog problem.

It almost looks, one scientist said, "as if the Los Angeles people really do not want to do much" about smog. Another pointed out that "everyone blames everyone else. No one wants to be the first to stop spewing for the fumes."

The three most serious smog sources are the oil refineries and other industries, auto fumes and back yard incinerators.

Rather than forming committees "to bother authorities who are already working on the problem or research groups to act as supra-bodies over others already established," the next step is to pinpoint the responsibility for smog-causing particles, and determine which of the sources is the worst offender.

It takes nearly two years for a new scientific group to become really familiar with

the smog problem, the scientists said. So instead of waiting for results of research just now being launched, they urged "immediate" use of knowledge already at hand, which is "sufficient to do the job."

The only way to start the attack on smog, they said, is to begin now, instead of everyone saying "let's do something about it but do it later."

One thing that can be done about the smog problem immediately, besides pinpointing smog sources, these scientists point out, is to plan for the future. New industries going up should be so located and designed that they do not contribute to air pollution.

Even though the scientific techniques for placing the blame for air pollution causes were not available a year ago, they can be used now.

In a sense, the scientists said, everyone living in Los Angeles county is responsible for the smog. They suggested that perhaps Los Angeles residents really do not want to find out exactly what sources spew forth

how much air-polluting material. If they do not find out, then "no action need be taken," and the future, when the smog problem will be increasingly serious, can be conveniently forgotten.

Devices to clean up fumes pouring forth from factories, refineries, autos and incinerators that are only 70% or less efficient will eventually result in air so polluted that it will kill Los Angeles residents, the scientists warned.

If the present expansion rate of industry doubling itself every five years is continued, the smog problem will continue to become more serious at a rate that accelerates greatly with time.

Science News Letter, December 11, 1954

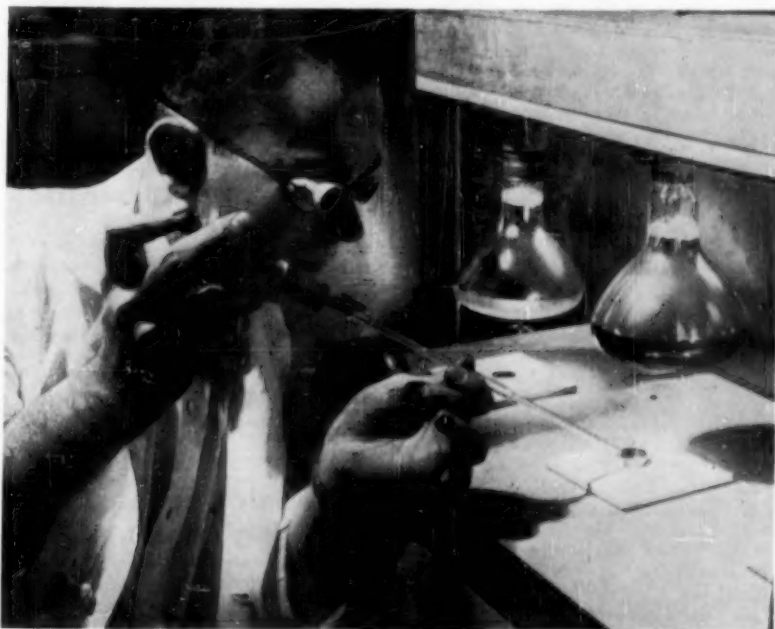
## ENGINEERING

## "Venetian Blind" Idea Used in New Lathhouse

► THE "VENETIAN blind" principle, used on the roof of a lathhouse, has produced a new type of structure for floriculture studies at the University of California at Los Angeles.

Constructed of aluminum strips, the structure has double sliding roof sections that afford precise regulation of light and shade. Each section is controlled by pull cords so that sunlight can be regulated separately for each given inside area of the lathhouse.

Science News Letter, December 11, 1954



"HOT" LAUNDRY WASTE—Richard Ebreinreich of New York University is shown here evaporating samples from radioactive wastes that have been treated in a special trickling filter plant. The plant is used for removal of radioactivity from wastes remaining after workmen's clothes have been laundered.

## PUBLIC SAFETY

# Obsolete C. D. Plans

► CIVIL DEFENSE planners in most U. S. cities are preparing programs that may well be obsolete in two years, the time it takes to make them work.

Dr. Harold A. Knapp Jr., a physicist with the Navy Department's Operations Evaluation Group, has made an exhaustive study of the problem. He told SCIENCE SERVICE, after presenting a paper on the subject at the meeting of the Operations Research Society of America in Washington, that almost all cities, including Washington, are planning against the bombs Russia now has. In two or three years, however, enemy bombs may well be up to 50 times more powerful.

Dr. Knapp, who is also civil defense director of South Woodley, Va., a suburb of Washington, said that most of the population will be inadequately protected if the answer to the following questions are based on obsolete data:

What areas should be completely evacuated? How far from ground zero is it safe just to take cover, and what kind of cover? What are the dangers from radioactive dust and what kind of protection is most effective? What preparations should have top priority?

In Washington, for instance, civil defense preparations are based on the assumption that a bomb equivalent to 500,000 tons, or half a megaton, of TNT would be dropped, he said. Such a bomb would cause serious damage to houses up to a four-mile radius.

By late in 1957, however, it is estimated that Russia would be capable of delivering bombs in the 25-megaton range, 50 times more powerful, which would cause the

same sort of destruction in a 14-mile radius, he said.

Perhaps even more important is that the men who plan our cities' air raid strategy have no official information on the dangers of "fall-out," or radioactive dust. They are told only that "the danger depends on the prevailing winds."

But it is known that Japanese fishermen 72 miles from a test H-bomb explosion in the Pacific last March were hit by fall-out and one died.

Some estimates are that an area of 6,000 square miles might be affected by radioactive dust. If so, in the event of an air attack on Washington, Philadelphia might be in serious danger from fall-out.

Another important consideration in determining civil defense strategy, Dr. Knapp said, is how much warning a city is likely to get. Sufficiently detailed information again is lacking, he said.

"At the present time the Federal Civil Defense Administration has no operations analysts working on these problems. Civil defense needs this kind of study as much or more than any other department, including the armed forces which have well established operations research groups."

Operations researchers, or "opsearchers," study ways to apply scientific analysis to problems of decision, including those of strategy, a technique that proved extremely effective in World War II.

"What we need to do is plan now for the threat that Russia will pose in two or three years, or U. S. cities will be continually behind in their preparations," he said.

Science News Letter, December 11, 1954

The military "nestling" patient is one who, on examination, shows just enough physical or emotional disturbance to induce the military surgeon to send the patient into the hospital for study and treatment.

This patient is inadequate for civilian or military life. His inadequacy and neurotic difficulties existed, however, before he entered military service.

The military, Col. Gatto thinks, should solve the problem of such patients by establishing near a large military hospital an organization where these patients could be actively working and, at the same time, getting such medical and psychiatric attention as they need as outpatients.

Science News Letter, December 11, 1954

## SCIENCE NEWS LETTER

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## PSYCHOLOGY

# Illusions Fool Monkeys

► MONKEYS ARE fooled by some of the same optical illusions that trick the eyes of humans.

To a monkey as well as to a man, up-and-down stripes on a girl's dress make her look taller and more slender than do horizontal stripes. And to a monkey, lights flashing on in rapid succession in an electric sign give the illusion of motion, Dr. Kathryn Ella Dominguez found in experiments conducted in the psychology department of Columbia University.

Girls' dresses and Broadway signs were not actually used in the experiments. An animal, for example, would be trained to reach toward the longer of two lines for a treat of a piece of apple or a peanut.

When he had mastered this lesson, he would be shown a horizontal and a vertical line of equal length. Reaching toward the vertical line showed he was fooled by the illusion.

Dr. Dominguez reports in the *Journal of*

*Genetic Psychology* (Sept.) that she got excellent cooperation from the monkeys. In fact, one year-old Cebus monkey reached for his reward so enthusiastically that he broke up the apparatus and had to be eliminated from the experiment.

Science News Letter, December 11, 1954

## PSYCHOLOGY

## Urge Solution for "Nestling" Patients

► A SOLUTION to the problem of the military "nestling" patient was presented by Col. Lucio E. Gatto, USAF (MC), director of professional services at the Air Force Hospital, Sampson Air Force Base, N. Y., and Dr. Henry L. Dean of Norristown State Hospital, Pa., at the meeting in Washington of the Association of Military Surgeons of the United States.





**ATOM-RADIATED POTATOES**—These potatoes from the same 1953 crop show the preservative value of doses of atomic radiation. Those on the left were not treated, while the one on the right was exposed briefly to powerful radiation last May at the University of Michigan. This is how it looked in September.

## ENGINEERING

## Preserving Potatoes

► WITHIN A year, you may be eating potatoes, onions, hamburgers and pork chops that have been exposed to atomic radiation. They last longer, research at the University of Michigan has shown.

Potatoes, for instance, which usually sprout or rot after six months, can be preserved at 48 degrees Fahrenheit for a year.

Spuds irradiated in the university laboratory were compared by a test panel with non-irradiated potatoes. A slightly different taste was reported, but it was preferred by some panel members.

The University of Michigan engineers who have designed an irradiating plant, the first of its kind, say there is no reason why a fully operative plant could not be constructed in the next year.

The plant could irradiate up to 250 bushels of potatoes in an hour at an estimated cost of six cents a bushel. Construction would cost about \$50,000 and operating costs would be \$40,000 a year, the engineers estimated. The potatoes would enter the rectangular radiation chamber directly from the truck by conveyor belts.

The source of the radiation could possibly be waste products from nuclear reactors. These substances could be purchased from the Government.

The scientists have also irradiated onions, cabbage, pork and beef, and although results are not conclusive, yet, the process may be used on these and other produce.

The results of the tests were reported by

L. E. Brownell, L. L. Kempe, R. C. Dennis and J. T. Graikoski at a meeting of the American Society of Refrigerating Engineers in Philadelphia.

Science News Letter, December 11, 1954

## GERIATRICS

## Aged Need Amino Acid Enriched Bread or Cereal

► A 'SPECIAL kind of enriched bread or ready-to-eat cereal should be produced at a low price for the oldsters in our population, Dr. Frederick J. Stare, professor of nutrition at Harvard School of Public Health, Boston, declared in a symposium on medicine for old folks held in New York under the sponsorship of the American Geriatrics Society.

The special enrichment in this bread or cereal for grandma and grandpa would consist of certain key amino acids such as lysine. This protein building block is particularly low in the cereal grains, but protein is especially needed by oldsters.

Since many of them cannot afford meat, milk and eggs, or amino acid pills, Dr. Stare thinks the cereal products should have their protein increased in both quantity and quality.

Such a product, he stated, "would find a useful role in the nutritional problems of the aged and in the prevention of such problems.

Science News Letter, December 11, 1954

## CYTOLOGY

## Life-Stuff Challenged As Pattern for Tissues

► EGGS OF sea animals, which must be self-sufficient for the task of carrying on the life of the species, are being used at the Marine Biological Laboratory, Woods Hole, Mass., to test theories about chemical reactions common to the beginnings of all life.

The results of the egg study challenge the widely held theory that deoxyribonucleic acid, known to be primary life-stuff, must be present all the time that new tissues are being formed, supplying the framework upon which new chemical compounds are laid down.

Eggs of sea urchins, of several species, and of star fish have been analyzed by Dr. Alfred Marshak and Celia Marshak, research team working in the Woods Hole laboratory and in the Lerner Marine Laboratory at Bimini in the Bahamas.

By adding the amino acid, thymine, made radioactive with carbon 14, the two scientists investigated the fate of the compound thymine makes with deoxyribonucleic acid. They do not find the expected compound in the mature eggs cast adrift in the ocean, although they find this substance in the reproductive cells of the parent animals.

They offer, in *Nature* (Nov. 13), a new theory of the chemical transformations in the early stages of cell division, involving better understanding of the reactions between successive forms of the life chemicals.

Science News Letter, December 11, 1954

## BIOLOGY

## Unconquered Wild Dog Kills Australian Sheep

► ALL NATIVE wild life of Australia has been brought under control, except the dingo, a medium-sized wild dog native to Australia and responsible for killing at least 600,000 sheep in one section of the continent alone in the past 10 years.

In an effort to protect 17,000,000 sheep, the Queensland Government is erecting a 550-mile dingo-proof fence from the New South Wales border to a point in North Queensland.

The fence, which will cost \$900,000 to build, is another attempt to stem the dingo tide that has rolled across Queensland from the unfenced cattle country of the Northern Territory and South Australia.

Shot at, trapped and poisoned for more than a century, the dingo has not only remained unconquered, but has become a serious national menace to the sheepmen of North Australia. One station in the Flinders Shire lost 2,500 sheep alone last year despite all efforts to cope with the pest.

Dingos vary in color from yellowish-red to gray. The origin of the animal is uncertain, with some evidence showing that it is a native wild dog and other evidence to indicate that it is a tame dog introduced into Australia years ago that now runs wild.

Science News Letter, December 11, 1954

## PSYCHIATRY

# Child Psychiatry Criticized

Children should be given credit for individual adaptability, such as the heroes of American success stories have shown, critic of child psychiatry urges.

► THE AMERICAN success story of log-cabin-to-president, slums-to-executive shows that much psychiatric theory is wrong, Dr. John D. Campbell of Atlanta, Ga., declared at the meeting of the American Medical Association in Miami, Fla.

Parental neglect, misunderstanding, rejection, discord in the home and poor environment are too often blamed for nervous and emotional disorders in children and adults, he said. This kind of thinking allows the child no credit for individual adaptability to difficulties such as the heroes of American success stories have shown.

"Very little attention has been given to the stock from which an individual sprang or to the constitutional make-up of the child himself," Dr. Campbell said in criticism of some child psychiatry.

There are such things, he said, as emotional disorders that originate in the individual and they occur in children much oftener than has been supposed.

Manic-depressive illness is one such disorder, he thinks. It is, he said, an important cause of suicide in children and accounts for three-fourths or more of otherwise well-adjusted children who develop "school phobia."

Dr. Campbell said these children suffer mood changes "out of the blue" and are "as perplexed by the illness as anyone." Adult manic depressives often describe depressed moods, feelings of unreality, queer headaches, and periods of retardation and over-stimulation since childhood years, he said. Children have these complaints with-

out actually experiencing a trigger episode such as that which may bring on other types of emotional disorders.

These children inherently like people, are friendly and outgoing, and strive for group approval. Unlike other types of emotionally ill, they are not seclusive or eccentric, and are uniformly well-liked. They take a serious, anxious, worrying attitude toward life and are notably lacking in ability to analyze their reactions.

"As a result of the timidity, feelings of insecurity, self-consciousness, and depressed mood," manic-depressive children may develop the "school phobia" although they are usually of average intelligence and often are selected by their classmates as leaders, Dr. Campbell explained.

The manic-depressive child frequently is brought to the psychiatrist only as the result of an emotional conflict between the patient and one or both parents, he said. Inability to explain the problem and inability of the parents to help often leads to feelings of guilt on both sides—in the child because of his resentment toward the parents, and in the parents because they are led to believe the problem is their fault.

"It is interesting that in several of my manic-depressive children the morbid history of the child almost exactly paralleled the morbid history of a manic-depressive parent, as to age of onset, recurrences, types of reaction and complications," he said. He called it "the most familial of all psychiatric diseases."

Science News Letter, December 11, 1954

## PHYSICS

# Unveil Speedy Computer

► NORC, A speedy computer for vital defense problems, will soon be put to work at the Naval Proving Grounds at Dahlgren, Va., which already has a battery of electronic calculators. The machine is called NORC for Naval Ordnance Research Calculator.

It was built by International Business Machines, and performs its arithmetic tasks just as a schoolboy does, one digit at a time. It calculates as fast as the information can be fed into it on magnetic tape, at a rate of 1,000,000 digits a second.

Numbers stored in the machine's cathode ray tube memory can be recalled in eight-millionths of a second. The "brain" can print its calculations as it proceeds, thus enabling the scientists to follow its operations if they desire.

A special magnetic tape feeding device five times faster than those in current use is incorporated in the machine. Research leading to the development of NORC began in 1946 and construction and testing has been under way since 1951.

NORC has been fed a complex naval problem concerning the motion of objects underwater. The solution to this puzzler is beyond the practical capacity of existing computers, but NORC came through with the answer.

The machine was dedicated at Columbia University, where it was built, before a group representing the Navy, the university, and industry. B. L. Havens, who supervised the construction of NORC, described its operation.

Science News Letter, December 11, 1954

## • RADIO

Saturday, Dec. 18, 1954, 5:00-5:15 p.m. EST  
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Watson Davis will list the outstanding science events of the year and discuss the highlights of technological and scientific progress.

## ENGINEERING

## Powerful Diesel Engine Used in Potash Mine

► A POWERFUL diesel engine so large that it would not go through the entrance and had to be assembled underground is now hauling ores in a potash mine in Carlsbad, N.M.

Although it is not much taller than an automobile, it is much longer and wider and is believed to be the largest and most powerful underground diesel-electric in the world.

The 40-ton locomotive can travel 37.5 miles an hour and can pull up to 1,000 tons on a level track. A special exhaust conditioning system lowers the temperature of the engine's burned gases from 1,000 degrees Fahrenheit to 160 degrees Fahrenheit by "scrubbing" the exhausts in large water tanks.

The engine is 47 feet seven inches long, seven feet wide and six feet high. Designed by General Electric Engineers, it is now speeding through the shafts of the U. S. Potash Company's mine in Carlsbad.

Science News Letter, December 11, 1954

## VITAL STATISTICS

## One-in-a-Hundred Chance Parent Will Die in a Year

► IN FAMILIES with young children, the chances are now less than one in 100 that one of the parents will die in a year.

The long-term decline in mortality has had a strong stabilizing influence on family life in the U. S., latest figures by the Metropolitan Life Insurance Company show.

More than 700,000 families are broken by the death of a mother or father each year.

Over a five-year period, chances are only nine in 1,000 that the father will die, and only 10 in 1,000 that either the mother or the infant will fail to survive. This is the case with the typical new family in which the husband is 20 and the wife is 19.

The probability of death in this five-year period increases with larger families and when parents are older.

The husband is usually the first member of his family to die. In 1953, death claimed 122,000 husbands under 55, during the time when their families were most dependent on them.

The chances that the new father, age 25, will survive for 20 years, covering the usual time taken to bring up and educate his children is 1,000 to 56.

Science News Letter, December 11, 1954

## GENERAL SCIENCE

# Attack Chemistry Nobel

► THE RUSSIANS are attempting to deify a 19th century Russian chemist, Dr. A. M. Butlerov, as the father of world organic chemistry in much the same manner as they idolatrized T. D. Lysenko as the father of biology.

An interesting by-product of this deification is the fact that to credit Dr. Butlerov, the Russians have decided to discredit an American chemist, Dr. Linus Pauling, 1954 winner of the Nobel prize for chemistry. (See SNL, Dec. 4, p. 357.)

In a report to the American Chemical Society's *Journal of Chemical Education* (Oct.), Dr. I. Moyer Hunsberger of Antioch College, Yellow Springs, Ohio, stated that the Russian criticisms of Dr. Pauling's work and the elevation of Dr. Butlerov are an "extremely obvious exaggeration of Butlerov's contributions to organic chemistry."

The Ohio chemist also reports that the great majority of Russian papers extolling the work of Dr. Butlerov and other Russians in the field of organic chemistry inevitably include "torrents of invective" against Western science in general and Dr. Pauling in particular.

Dr. Pauling has been singled out by the Soviets because his work is related to that of Dr. Butlerov.

The Russians believe Dr. Pauling has contributed theories to organic chemistry that

directly oppose Communistic philosophy, and are therefore "an example of world outlooks hostile to the Marxist view."

It is ironic that, although the Soviet authorities are inveighing against Pauling for "unhealthy influences of corrupt bourgeois philosophy and science," the U. S. State Department last year denied him a passport validation on the unexplained grounds that a trip to India "would not be in the best interests of the United States."

Having received the Nobel Prize in chemistry on Dec. 10, Dr. Pauling is embarking on a trip around the world. The Nobel award, the most highly coveted recognition of scientific achievement, is usually considered a mark of honor for the nation whose citizen has won the distinction, as well as for the man himself.

The theory of resonance, one of the contributions to theoretical chemistry for which Dr. Pauling was awarded the prize, reconciles two opposing ideas about the likelihood of chemical combination. It explains the structure known to organic chemists as the "benzene ring" in a way more harmonious with known electronic behavior than the conventional picture of six carbon atoms joined alternately by single and double lines supposed to represent the combining forces of the carbon atoms.

Science News Letter, December 11, 1954



**HITCHING A FREE RIDE**—Dr. A. J. Sharp of the University of Tennessee points out a "piggy-back" plant, one of many he has found growing in the Great Smokies. This is a rhododendron that has rooted and is doing well on the trunk of a yellow birch tree.

## MEDICINE

## 134-Year-Old Acne Lotion Stabilized

► AN OLD-NEW medicine for acne was shown to members of the Association of Military Surgeons of the United States meeting in Washington.

It is a powdered form of white lotion, or lotio alba. This sulfated potash and zinc sulfate combination has been used in acne treatment for 134 years. But for just about all that time, doctors have complained that the lotion was unstable, began to deteriorate in 48 hours and by the end of two weeks storage was not much more than plain water.

E. Fougera and Company of New York thinks it has overcome that objection by putting the material up in the form of a powder which the patient makes into a solution each time he uses it. The powder is supplied in small packages. One package is mixed with one tablespoonful of water and applied to the pimples with a bit of cotton.

A new product to relieve stuffy noses was also shown to the military surgeons. It is tetrahydrozoline hydrochloride, just put on the market by Chas. Pfizer and Co., New York, under the trade name, Tyzine. This new kind of nose drops is said to have the advantage of being without rebound action, meaning that it will not make the free-breathing nose all stuffy again and needing more drops within an interval of a few hours.

Science News Letter, December 11, 1954

## ENGINEERING

## Radioactive Wastes

► PRESENT METHODS of disposing of radioactive wastes are safe, but in many cases extremely expensive.

This problem will grow and may well be a stumbling block to the commercial use of atomic energy, Drs. Abel Wolman, consultant, and Arthur E. Gorman, sanitary engineer for the Atomic Energy Commission, told the American Society of Mechanical Engineers meeting in New York.

"Hot ashes" are particularly dangerous, they said, because man cannot sense them without special instruments. Small doses can be very dangerous and sometimes fatal.

Presently, wastes from atomic plants are sealed in cement blocks and dumped in the ocean, or sent up tall chimneys, or stored in underground tanks, or sometimes cooled off in storage yards. Underground disposal costs up to \$1.75 a gallon, dumping in the ocean costs up to \$1 a pound, and dispersal in the air costs up to \$5 a cubic foot.

Scientists are now working on the application of cheaper methods of getting rid of the wastes. One possibility which has not been completely studied is dumping the radioactive residue into deep deserted oil wells or mines.

Another scheme receiving serious study is a method of absorbing the wastes into

clay pellets. The pellets are then glazed in a furnace so that the products cannot seep out. These beads perhaps can be safely buried.

By the turn of the century, the scientists estimated, there would be three tons of radioactive waste a day, requiring one-twentieth of the world's oceans for safe dilution.

Science News Letter, December 11, 1954

## PHYSICS

## New Type High Voltage Machine Is Constructed

► A NEW kind of high voltage machine, a modified Van de Graaff generator, has been made. Instead of carrying electrostatic charges on its moving belt, it carries charged condensers that are automatically connected in series as they reach the top of the machine, increasing current output and voltage.

The device is described in *Nature* (Dec. 4) by R. E. D. Clark of the Cambridgeshire Technical College and F. T. Farmer of the Royal Victoria Infirmary, Newcastle upon Tyne.

Science News Letter, December 11, 1954

## PSYCHIATRY

**Weather Neglected by Psychoanalysts, Too**

► **THE WEATHER**, that favorite topic of conversation for everyone, has apparently been neglected by psychoanalysts.

By failing to study the meaning of what the patient says about the weather, psychoanalysts have overlooked "valuable opportunities" for learning more about the patient's nature and difficulties, Dr. Philip Solomon of Boston charged at the meeting of the American Psychoanalytic Association in Boston.

"Everybody talks about the weather, but nobody does anything about it in psychoanalysis," Dr. Solomon said. "Perhaps analysts have too readily assumed that patients who talk of the weather are demonstrating resistance."

Dr. Solomon studied associations to the weather given by patients in both Los Angeles and Boston. He noted specifically whether they had good or bad associations with rain, wind, temperature, snow, clouds, sunshine and so on.

Some seemed to look on weather as an exhibition of "Mother Nature" and with a feeling as if parents had something to do with it. In such cases, there was an unpleasant association to the weather.

Others reacted to the weather as a projection of their own state of feelings. This corresponded to pleasant associations.

Grown-ups, but not children, cry at a happy ending to a story or to their own troubles because they realize that the final ending, death, means separation from loved ones. This psychoanalytic finding and its explanation was reported by Dr. Sandor Feldman of Rochester, N. Y.

Science News Letter, December 11, 1954

## MEDICINE

**Tri-Metal Medicine Aids Undulant Fever Recovery**

► **SWALLOWING DOSES** of a three-metal solution helped the recovery of seven patients with chronic pulmonary undulant fever, Dr. Alvis E. Greer of Houston, Tex., reported at the meeting of the American Medical Association in Miami, Fla.

The metals are cobalt, copper and manganese.

Exactly how the treatment works is not known completely. Dr. Greer said it is his purpose "to only suggest its further trial by other observers."

Two other patients have shown improvement with this treatment.

Undulant fever is also known as brucellosis. It is marked by remittent or intermittent undulatory fever, neck pain, headache, sweating, constipation, weakness and anemia. Man acquires the disease by drinking infected milk or by contact with infective material.

"There is a general impression," Dr. Greer said, "that the disease occurs only in

cattle, swine, and goats, although other domesticated animals, such as sheep, horses, and even poultry may suffer with brucellosis.

"Wild animals known to be susceptible are rabbits, deer, moose, elk, buffalo, and dogs."

Dr. Greer reported that farmers and ranchers suffered from the disease more than any other occupational group, with 36 of 59 cases in this group.

"Fourteen of my 18 cases were directly connected with cattle and 12 of the 18 cases were women. The other occupations included one salesman, one drug clerk, one oil field worker and one school teacher."

Science News Letter, December 11, 1954

## ENGINEERING

**Fuel May Be Used to Cool Rockets of Future**

► **ROCKET FUEL** may be used as a coolant to prevent rocket planes of the future from melting at high speeds. Or perhaps the planes will have to be partially rebuilt after each flight lasting more than a few minutes.

These two schemes were offered by scientists at a meeting of the American Society of Mechanical Engineers in New York as solutions to the problem of the "thermal barrier," which at present limits the speed of jet planes.

When projectiles reach a speed five or six times that of sound, such intense heat is generated that aluminum and steel melt.

The scientists agreed that research on thermal barrier problems has lagged far behind the capabilities of aircraft designers, but they sharply disagreed on whether the limit of aircraft speed is in sight.

The points were raised in papers delivered by Charles H. McLellen of the National Advisory Committee for Aeronautics, Harold W. Adams of Douglas Aircraft, and F. R. Steinbacher and Louis Young of Lockheed Aircraft Co.

Science News Letter, December 11, 1954

## MEDICINE

**Dextran With Iron Helps Build Blood Hemoglobin**

► **DEXTRAN**, PERHAPS best known as a blood plasma expander, can help the body build hemoglobin for redder blood in anemic persons.

It does this when combined with iron. The combination makes it possible for the doctor to give "shots" of iron into the muscles in anemic patients who cannot take iron by mouth.

Good results with this dextran-iron combination, supplied under the British trade name Imferon, are reported by Drs. D. F. Cappell, H. E. Hutchison, E. B. Hendry, Hugh Conway, J. M. Scott and A. D. Telford Govan of Glasgow, Scotland, in the *British Medical Journal* (Nov. 27).

Science News Letter, December 11, 1954

**IN SCIENCE**

## PSYCHOLOGY

**May Be Getting Too "Gladiator Minded"**

► **AMERICANS MAY** be becoming too "gladiator minded," Dr. Frank Tallman, psychiatrist at the University of California at Los Angeles, charges.

Our biggest participation in group activity is in the role of spectators at football, baseball and basketball games, or boxing and wrestling matches. If we are unwilling to attend the games in person, we follow them on our television sets.

"While interest in sports is in itself all right," Dr. Tallman said, "direct participation in some form of group activity rather than just in the role of an observer would be a much healthier form of recreation."

"More active participation in recreation appropriate to one's age group would be better for easing some of the tension of modern living than sole dependence on spectator sports," he said.

Our children's recreational activity might be improved also, he suggested.

"Perhaps public parks are really too neat for children," he said. "They might be better off with plain dirt on their feet and less grass to keep off."

Science News Letter, December 11, 1954

## PALEONTOLOGY

**"Living Fossil" Insects Found in Death Valley**

► **TWO POPULATIONS** of rare insects, so-called "living fossils" from the Ice Age, have been discovered in Death Valley.

The discovery was made in a pond near Saratoga Springs by Dr. John Belkin and William McDonald of the University of California at Los Angeles.

One group of insects is evolutionarily midway between gnats and true mosquitoes, and is known as *Corethrella laneana*. This species has also been identified in Mexico. However, the Death Valley species is different enough to suggest a distinct subspecies.

The other "living fossil" is a true mosquito. Known as *Uranotaena anhydros*, it is related to a type found in Texas. It is thought to feed on frogs.

Both populations of insects apparently have been isolated in the desert area since the end of the last glacial period.

In the same area Dr. Carl Hubbs of the Scripps Institution of Oceanography found a "living fish fossil." This was the desert pupfish which is thought to have been isolated in the area for 11,000 years since the ice age.

Science News Letter, December 11, 1954



# CE FIELDS

## PHYSICS

### Date Meteorites as 5,000,000,000 Years Old

► METEORITES, THE earth's only imports from outer space, are as old or older than the earth they smash into. They are about 5,000,000,000 years old, with the minimum age of the earth itself about 4,500,000,000 years.

This was determined by Gerald J. Wasserburg of the University of Chicago's Institute for Nuclear Studies and Richard J. Hayden of the Argonne National Laboratory. They reported to the American Physical Society meeting in Chicago that they had dated two meteorites by measuring the ratios of atoms of radioactive potassium 40 to atoms of the inert gas, argon 40, within them.

The new measurements showed that two meteorites solidified 4,860,000,000 and 4,700,000,000 years ago.

The datings strengthen the idea that both meteorites and earth were formed about the same time.

Science News Letter, December 11, 1954

## MEDICINE

### Way to Improve Cancer Treatment in Women

► A WAY to save 25 out of 100 women now doomed to cancer death was reported by Dr. Joe V. Meigs of Vincent Memorial Hospital, Boston, at the meeting of the American Medical Association in Miami, Fla.

The method is a way of picking which women can be helped by X-ray or radium treatment and which can be helped by surgery.

"It has now been shown that cancer of the cervix (neck of the womb) can be treated well by means of surgery or radiation," Dr. Meigs said. "However, even in the early cases, there is a 25% failure in both types of treatment, although the treatment is well given."

Through a study of nearly 300 patients, he and his colleagues have concluded the failures came about because patients with cancers resistant to radiation were getting this treatment instead of surgery, while patients with radiation-sensitive cancers were being treated by surgery. The surgery, he said, fails in the radiation-sensitive cases.

A vaginal smear, painless test that many women now have routinely for cancer detection, makes it possible to determine which patient should get X-ray or radium treatment and which should have surgical operations for best results.

A study of this method is now being conducted at Harvard Medical School and

three Boston area hospitals in addition to Vincent Memorial. The work is being directed by Dr. and Mrs. John B. Graham of Boston in collaboration with Dr. Meigs.

"In a few years the trend of results will be obvious," Dr. Meigs said, "and it is our hope that selection of patients by means of trials with radiation will help partially to solve this problem" of cancer of the cervix.

Science News Letter, December 11, 1954

## GENERAL SCIENCE

### Senator Asks for More Engineers in Government

► THE U.S. needs more engineers and fewer lawyers in elective office, the *American Society of Mechanical Engineers* meeting in New York was told.

Lawyer-dominated political decisions are not necessarily bad, said New York State Senator Thomas C. Desmond, but they could be changed for the better by more men with previous engineering experience.

In this age of atomic energy and jet craft, he said, the "forward-looking," analytical mind of the engineer is sorely needed in political office. The senator, a retired engineer himself, deplored the fact that, of 56 New York State senators, 33 were lawyers.

"More engineers in such policy-forming positions could have contributed different and, I believe, more constructive points of view toward the decisions reached," he said.

It is high time, he added, "that engineers who have contributed so much to our material advancement should cooperate with other men of good will toward our political advancement."

Science News Letter, December 11, 1954

## DENTISTRY

### Poor Health Goes With Poor Teeth

► THE PERSON who has a lot of ailments that take him frequently to the doctor probably also goes frequently to the dentist because of many cavities in his teeth.

Studies showing this are reported by Lieut. J. H. Manhold, Navy Dental Corps, and Dr. C. E. Izard of the Naval School of Aviation Medicine, Pensacola, Fla., in *Science* (Nov. 26).

About 15% of a group of naval aviation cadets, they found, made five or more visits to the dispensary during an eight-month period. This same 15% of cadets, who could be considered to have the "poorest" health, had a 31.09 DMF (decayed, missing or filled teeth) rating, compared to a 27.22 rating for a representative sample of the overall population of cadets.

The finding, the scientists state, shows that when a person's health is being appraised in general terms, such as good, fair or poor, his dental condition should also be considered.

Science News Letter, December 11, 1954

## PLANT PATHOLOGY

### Unidentified Disease Attacks Yellow Poplars

► AN UNIDENTIFIED fungus disease is attacking yellow poplar saplings in Mississippi.

The disease was first discovered in 1953 by E. Richard Toole and B. J. Huckenpahler of the U. S. Department of Agriculture's Southern Forest Experiment Station, New Orleans. At that time, it was found in only one small area of the Tallahatchie Experimental Forest near Oxford, Miss. Reports received in 1954, however, indicate that the disease is now killing tree throughout the state.

The fungus disease causes dieback, that is, the branches die from the crown of the tree down. The dieback can either spread rapidly, or slowly, killing 10% to 20% of the crown in one year.

The scientists stated "it is perhaps important that the disease first attracted our attention after several severe drought years had occurred in the area. Possibly the fungus is always present in the forest and has built up to the present situation on trees somewhat weakened by the recent drought cycle."

The yellow poplar, also known as the tulip tree, is one of the major trees utilized by the forestry industry in the United States and has been long known for its relative freedom from damaging disease.

Science News Letter, December 11, 1954

## PHYSICAL CHEMISTRY

### Tune in on Atoms As Molecules Change

► TAKING ADVANTAGE of the fact that every chemical atom is a spinning magnet, Dr. Richard A. Ogg, Jr., professor of chemistry at Stanford University, uses the responses to radio frequency waves beamed at reacting chemicals to time the reactions.

When first mixed, chemicals change their relationship to each other in a fraction of a second. By the time this difference has appeared throughout the volume of the mixture, the initial change is long past.

However, by making the radio waves visible on a cathode ray tube, or television-like screen, pips and wave forms can show what is happening within the chemical molecule as it happens.

Dr. Ogg uses for this new method of chemical study an application of the principle of nuclear magnetic resonance worked out by Dr. Felix Bloch, formerly of Stanford University and now the first director-general of CERN, the cooperative group formed to allow scientists from 12 European countries to carry out research in nuclear physics because efforts and equipment in any one country were insufficient.

This research won Dr. Bloch the 1952 Nobel prize in physics, shared with Dr. Edward M. Purcell of Harvard University, who worked in a similar field.

Science News Letter, December 11, 1954

## GENERAL SCIENCE

# Christmas Is Tradition

Trees, toys and tradition mean Christmas. Many of the customs we practice today have their roots deep in the history of man. America's favorite Christmas tree is the spruce.

## See Front Cover

► THIS YEAR, as for centuries past, eager and wide-eyed children will hurry downstairs in the wee hours of Christmas morning to rip open packages of toys that have been nestled under decorated evergreens.

In so doing, these youngsters will be partaking in a holiday that, with time, has become a warm mixture of pre-Christian customs, religious rites and modern invention.

For, whether it was to pay homage to pagan gods or to drive away evil spirits, man practiced many of the customs that we now associate with this holiday more than 5,000 years before the birth of Christ. And to these he has added ritual and, much later, new innovations born of his contemporary world.

From the dark woods of north Europe to the hot lands of India, early worshippers decorated evergreen trees, hung boughs of holly and mistletoe and burned logs to celebrate the first day of winter, which they called Yuletide. This was the time when the sun seemingly stood still, and the light of day was shortest.

## Christmas Tree Origin

However, if we can trace back the history of evergreen boughs and holly and mistletoe, the custom of the Christmas tree as we know it today remains a mystery. Many peoples in many lands have claimed they originated the Christmas tree custom.

The English credit St. Boniface, an eighth century missionary as the first designator of the fir as the Christmas symbol.

The Vikings stated that the Lord's emissaries, Faith, Hope and Charity, were responsible for making the balsam fir the Christmas tree, because it bears crosses on every branch, while the Germans and the French credit Bonchevalier as the discoverer of the Christmas tree. Scandinavians, on the other hand, erected grain-supporting poles as a Christmas gift to birds, and some authorities attribute this as the Christmas tree origin.

In any event, trees were always a vital part of nearly all the pagan Northland's festivals, and they were to be found in the huts of the Northlanders at New Year's to drive away evil spirits and bring good luck.

Most scholars, however, although in disagreement as to the origin of the Christmas tree, are in agreement about the fact that Christmas trees were not generally accepted as such until the 17th century in Germany, from where the custom spread to France and England and Scandinavia.

Even the knowledge of just how the Christmas tree crossed the Atlantic to the New World is obscure, but there is evidence to indicate that the first Christmas trees were brought to the United States by the Hessians, German mercenaries hired by the British to fight in the American Revolution. One story relates the account of a spruce tree that was cut for the Christmas celebration at Chicago's Fort Dearborn in 1804.

The lack of historical fact to establish the time elements involved has not deterred the custom from becoming widely accepted in North America, where more than 30,000,000 evergreens are harvested each year for the holiday.

The fir has often been considered the real Christmas tree, but Americans prefer the spruce, with its short, sharp needles and down-hanging cones. A close cousin of the spruce and another favorite is the fir, which has softer needles, usually curved, and cones that stand straight up.

Pine trees are often used here, and they can be distinguished from the spruce and fir by the fact that the pine's needles come in bunches or pairs rather than singly. Still another Christmas tree used by Americans is the red cedar, which has very fine, feathery branches of small pointed leaves.

Plants other than evergreens are sometimes used in the United States. In the Southwest, for example, some of the tree-like cacti are decorated and lighted up, and in New Orleans, it is customary to hang lights on the branches of the hackberry or sugartree.

## History of Holly

The history of holly and mistletoe in pre-Christian time is much better documented. Their use is traced back to the "festivals of the sun," or Yuletide. Historians tell us that holly, mistletoe and ivy were used in the rites of fire-worshippers as long ago as 2,000 B.C. in Persia and India.

Shown on the cover of this week's SCIENCE NEWS LETTER is some holly in bloom. It flowers in the late spring.

At the yuletide time of year, Egyptians were hanging palm sprays and the Romans, in their feasts to Saturn, used evergreen



**CHRISTMAS BOUGHS**—This youngster sits amid freshly cut pine boughs, which will soon be transformed into bright Christmas decorations that will symbolize centuries of tradition and holiday spirit. Evergreen boughs, like holly and mistletoe, have been used to trim for this season for more than 5,000 years before the birth of Christ.

and laurel. Both the Greeks and Scandinavians made the evergreen fir a part of their winter rites, while life eternal was symbolized by mistletoe and green boughs in Druid lore.

Certainly not all the present day Christmas customs are direct descendants of pagan rites, and one of the most widely accepted and practiced, the exchange of gifts and the jolly old man who brings them, can be traced to a Christian origin.

The original St. Nicholas was a third century bishop, who lived at Myra in Asia Minor and traveled about, distributing gifts to the poor and sweets to the children.

### Santa Has Many Names

In the United States, St. Nicholas became Santa Claus, who arrives from his North Pole workshop each Christmas Eve with his reindeer and sleigh to fill the stockings of good little boys and girls. In Europe, Saint Nick arrives on his faithful white horse, and in France, Bonhomme Noel puts the children's gifts in their wooden shoes. Kris Kringle performs similar miracles for Scandinavian children.

And so, trees, toys and tradition mean Christmas.

However, Christmas also means cards and carols and gaily colored red and green decorations.

Carols, although a part of the singing and dancing of ancient pagan rites, slowly found their way into the form in which we rejoice in their singing today when St. Francis of Assisi encouraged the writing of carols in native language during the 13th century. From Italy, we are told, the custom of caroling spread to France, Germany and later to England.

Christmas cards are relative newcomers to the holiday scene. Not commonly sold until 1862, the credit for the first card is shared by J. C. Horsley, the English artist, and William Maw Egle, an obscure engraver's apprentice.

Horsley is credited with designing his card in 1845 as an apology to his friends for not writing the customary holiday letters. Egle, on the other hand, is said to have engraved his card in 1842. Both cards

bore the same inscription, "A Merry Christmas and a Happy New Year to You."

Burning the Yule log has all but disappeared with the introduction of modern heating and lighting. The Druids made the burning of the Yule log a ceremony, appropriated from the Vikings. The custom spread rapidly in medieval England and was widely practiced in America before useful fireplaces in our houses went out of fashion.

Modernization has all but snuffed out the Christmas candle, once used to light the trees and homes and hearts of men. Possibly partly because this holiday was close to the shortest day of the year, when light was not as plentiful, the candle helped to brighten the darkness.

For safety reasons and reasons of progress, however, the candle has been replaced with elaborate electrical systems, and the natural decorations have given way to plastic balls, artificial snow and brightly shining tinsel.

There can be little doubt that Christmas day, as we have come to know it, celebrated at a point in the year's time when the weather seems coldest, has evolved through the ages as a warm and joyous occasion.

Science News Letter, December 11, 1954

### INVENTION

## Yellow Nectarine Receives Plant Patent

▶ A DISTINCT variety of yellow-fleshed nectarine has been patented.

The inventor of the nectarine tree, Fredric W. Anderson of Merced, Calif., states that his invention is characterized by free-stone fruit, which is yellow instead of white-fleshed, approximately 50% larger in size than the Stanwick nectarine that is currently marketed, and will keep better during shipping.

Mr. Anderson was awarded plant patent No. 1,324.

Science News Letter, December 11, 1954

### MEDICINE

## Thirst Believed Cause Of Child Poison Deaths

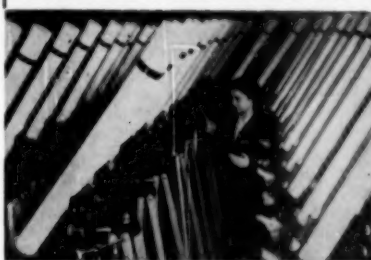
▶ POISON DEATHS of many young children have been ascribed to hot weather and consequent thirst.

"Although there may be more kerosene in the child's environment in the winter, it is during the summer that he will be more likely to drink it due to thirst," Dr. Hugh A. Carithers, chief of pediatrics at St. Vincent's Hospital, Jacksonville, Fla., told the meeting of the American Medical Association in Miami, Fla.

Science News Letter, December 11, 1954

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# Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N. Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

**THE ADOLESCENT EXCEPTIONAL CHILD: A Realistic Approach to Treatment and Training—Woods Schools**, 79 p., paper, free upon request to publisher, Child Research Clinic, Langhorne, Pa. Proceedings of the 1954 Spring Conference of the Child Research Clinic of the Woods Schools discussing diagnosis, treatment and training of the retarded child, with emphasis on vocational training.

**AMERICAN GAME BIRDS OF FIELD AND FOREST: Their Habits, Ecology and Management—Frank C. Edminster—Scribner's**, 490 p., illus., \$12.50. Discussing each species of American game birds, telling of their habits, their relationship with man and conservation requirements for their survival.

**THE ANATOMY OF THE DIASTEMAL PALATE IN MICROTINE RODENTS—Wilbur B. Quay—University of Michigan Press**, Miscellaneous Publications of the Museum of Zoology, No. 86, 41 p., illus., paper, 75 cents.

**ART IN SCIENCE—György Kepes—Simon and Schuster**, 3 p., 32 plates, portfolio, \$6.00. A collection of 32 paintings, drawings and photographs of excellent quality suitable for framing.

**THE ART OF PRIMITIVE PEOPLES—J. T. Hooper and C. A. Burland—Philosophical Library**, 168 p., illus., \$7.50. The art of primitive people provides mute evidence of the development and exchange of ideas, artistic conceptions and techniques over the world.

**THE ATMOSPHERIC LUNAR TIDES—Ryukichi Sawada—New York University Press**, Meteorological Papers, Vol. 2, No. 3, 31 p., illus., paper, \$1.50. Based on work done at New York University while the author was on leave from his post in Tokyo.

## 188 Math. Puzzles \$1.00

Test your mental agility on the 188 mathematical puzzles in Geoffrey Mott-Smith's intriguing "MATHEMATICAL PUZZLES FOR BEGINNERS AND ENTHUSIASTS." Puzzles like Tartaglia's Riddle, The Hoskins Family, The Flag of Equatria and The Wily Chief for those who know only simple arithmetic. Puzzles like Sally's Age and The Ferryboat Gate for those who understand elementary algebra and plane geometry. Puzzles like The Anagram Box and Poker Dice for geniuses. Puzzles calling only for ingenuity and logic. Puzzles based on plane figures, the properties of digits and integers, decimation, permutation, probability, and the analysis of popular board and card games. They're all here in this big 248-page book, together with their solutions. EXTRA! Valuable tables of prime numbers, squares, and higher powers. Second revised edition. SEND ONLY \$1.00 FOR YOUR PAPERBOUND COPY (a saving of \$1.25 off the regular clothbound edition) to Dover Publications, Dept. 22, 920 B'way, N.Y. 10, N.Y. Money back in 10 days if not delighted.

**BIG DAM FOOLISHNESS: The Problem of Modern Flood Control and Water Storage—Elmer T. Peterson**, with introduction by Paul B. Sears—*Devin-Adair*, 224 p., illus., \$3.50. The author believes that the building of big dams is a waste of taxpayers' money and that flood control can best be accomplished by "keeping water where it falls."

**BIRDS THE WORLD OVER: As Shown in Habitat Groups in Chicago Natural History Museum—Austin L. Rand and Emmet R. Blake—Chicago Natural History Museum**, 96 p., illus., paper, \$1.50. The habitat groups of the Museum represent birds from five continents, Antarctica and several islands, in lifelike settings.

**BRINGING GAS TURBINES DOWN TO EARTH—Charles A. Krasne and others—Student Gas Turbine Research Group**, 140 p., illus., paper, \$10.00. A survey of all non-aircraft applications of gas turbines, prepared by a student group of the Harvard Business School.

**CAPITAL AND OUTPUT TRENDS IN MINING INDUSTRIES, 1870-1948—Israel Borenstein—National Bureau of Economic Research, Inc.**, Occasional Paper 45, 81 p., paper, \$1.00. The purpose of this study was to discover what light the past record might throw on future demand for capital in mining industries.

**CERAMIC, PAPER, RUBBER, TEXTILE, WOOD, AND OTHER PRODUCTS AND PROCESSES: Government-Owned Inventions Available for License—Government Patents Board—Office of Technical Services**, Patent Abstracts Series No. 7, 26 p., paper, \$1.00. Describing 308 inventions.

**CONTRIBUTIONS TO THE MORPHOLOGY OF THE DELESSERTACEAE—Florence Signaigo Wagner—University of California Press**, 66 p., illus., paper, \$1.00. Discussing marine algae.

**EIGHTH ANNUAL REPORT OF THE OAK RIDGE INSTITUTE OF NUCLEAR STUDIES, JUNE 30, 1954—William G. Pollard**, executive director—*Oak Ridge Institute of Nuclear Studies*, 70 p., illus., paper, single copies free upon request to publisher, P. O. Box 117, Oak Ridge, Tenn. Reporting the accomplishments of the Teletherapy Evaluation Board in the development, in co-operation with 22 medical schools, of clinical devices using high-energy radiation sources, as well as other activities of the Institute.

**ELECTRICAL AND ELECTRONIC APPARATUS: Government-Owned Inventions Available for License—Government Patents Board—Office of Technical Services**, Patent Abstract Series, No. 5, 160 p., paper, \$4.00. Containing 1,915 abstracts of inventions.

**ENGINEERING CYBERNETICS—H. S. Tsien—McGraw-Hill**, 289 p., illus., \$6.50. The physicist-mathematician Ampere coined the word "cybernetique" to mean the science of civil government. It has now been borrowed as the name of the new science dealing with the organization of mechanical and electrical components for stability and purposeful actions.

**FLUORIDATION: As a Public Health Measure—James H. Shaw, Ed.—American Association for the Advancement of Science**, 232 p., illus., \$4.50. The third in a series of three monographs giving scientific evidence on the effect on dental health of fluorides.

**GUIDE TO POPULAR FLORAS OF THE UNITED STATES AND ALASKA—S. F. Blake—Govt. Print-**

**ing Office, USDA Bibliographical Bulletin**, No. 23, 56 p., paper, 25 cents. A selected list of nontechnical works on the identification of flowers, ferns and trees.

**HIGH-ENERGY ACCELERATORS—M. Stanley Livingston—Interscience**, 157 p., illus., \$3.25. Describing the newest, largest and highest-energy accelerators.

**HIGHWAY ACCIDENTS AND RELATED FACTORS—Heinz Haber and others—Highway Research Board**, Bulletin 91, 54 p., illus., paper, 75 cents. One of these five papers demonstrates how known behavior patterns can combine with the geography covered in a trip to cause accidents.

**HUMAN LIMBS AND THEIR SUBSTITUTES—Paul E. Klopsteg and Philip D. Wilson, Eds.—McGraw-Hill**, 844 p., illus., \$12.00. Presenting results of engineering and medical studies of the human limbs and the application of these data to the design and fitting of artificial limbs, as well as the care and training of amputees.

**NEEDED RESEARCH IN HEALTH AND MEDICAL CARE: A Bio-social Approach—Cecil G. Sheps and Eugene E. Taylor—University of North Carolina Press**, 216 p., \$5.00. Based on a seminar held in Chapel Hill in September 1952.

**ORDOVICIAN CEPHALOPOD FAUNA OF BAFFIN ISLAND: Containing a Study of the Ordovician Trilobites from Silliman's Fossil Mount—A. K. Miller, Walter Youngquist, Charles Collinson and Harry B. Whittington—Geological Society of America**, Memoir 62, 234 p., illus., \$4.75. Silliman's Fossil Mount yields well-preserved fossils in abundance, all of which seem to represent a single marine fauna.

**PARENTS AND DELINQUENCY: A Report of a Conference—Helen L. Witmer, Ed.—Govt. Printing Office, Children's Bureau**, 43 p., paper, 20 cents. Report of the Conference on Juvenile Delinquency, June 28-30, 1954.

**PHOTOGRAPHIC MEASUREMENTS: Problems and Solutions—Gomer T. McNeil—Pitman**, 101 problems, 10 tables, illus., \$5.00. Dealing with the mathematics involved in the physics of photography.

**RECORDS OF FISHES IN THE JOHN N. LOWE COLLECTION FROM THE UPPER PENINSULA OF MICHIGAN—William Ralph Taylor—University of Michigan Press**, Miscellaneous Publications of the Museum of Zoology, No. 87, 50 p., paper, 50 cents.

**SONG OF THE SKY—Guy Murchie—Houghton-Mifflin**, 438 p., illus., \$5.00. Presenting the phenomena of the sky, from the formation of snow crystals to the navigation of an airplane.

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**STUDIES IN MATHEMATICS AND MECHANICS**—Garrett Birkhoff, Gustav Kuerti and Gabor Szegő—*Academic Press*, 353 p., illus., \$9.00. A group of invited papers collected to celebrate the 70th birthday of Prof. Richard von Mises.

**THE TEACHER AND MENTAL HEALTH**—Prepared by the National Institute of Mental Health—*Govt. Printing Office*, Public Health Service Publication, No. 385, 20 p., illus., paper, 15 cents. Suggesting that teachers, along with parents, can assist in fostering the healthy emotional development of the child.

**TREASURY OF PHILOSOPHY**—Dagobert D. Runes, Ed.—*Philosophical Library*, 1280 p., \$15.00. An alphabetical list of important philosophers, with biographical sketches and representative excerpts from their work.

**TREATISE ON INVERTEBRATE PALEONTOLOGY: Part D, Protista**—Raymond C. Moore, Ed.—*Geological Society of America and University of Kansas Press*, 195 p., illus., \$3.00. Including a survey of the protozoa Radiolaria and Tintinnina.

**WHEN MINDS GO WRONG: The Truth About Our Mentally Ill and Their Care in Mental Hospitals**—John Maurice Grimes—*Davin-Adair*, 246 p., illus., \$3.50. Revised edition for the public of a report privately printed in 1951.

Science News Letter, December 11, 1954

## PUBLIC SAFETY

## Poison Gas Danger

► YOU MAY be in danger of a kind of poison gas attack in your home, the American Medical Association warned at its clinical meeting in Miami, Fla.

The war gas phosgene, for example, can be produced by the action of heat on carbon tetrachloride found in many homes. Fire extinguishers containing this chemical should not be used for fires in enclosed areas, although they are safe when used where there is sufficient circulating air.

Enough fumes can accumulate in a closed room from wood alcohol or benzol to become explosive if a spark reaches them, the AMA warning said.

Carbon tetrachloride is used in dry cleaning and in many paint and varnish removers as well as in fire extinguishers. Housewives are warned that the action of dousing material to be cleaned into a pan of

the liquid creates a heavy concentration of vapor in the breathing zone with potentially serious consequences.

Constant exposure to air containing one part of carbon tetrachloride vapor to 1,000 parts of air can cause chronic poisoning and damage to the liver and kidneys.

Fumes may accumulate dangerously when paint or varnish removers are spread on large surfaces.

"Do-it-yourself" activities are leading to more frequent use of various solvents in the home. This use, doctors at the meeting were told, should be recognized as a possible but often unsuspected source of disability or illness.

The AMA's warning was presented in an exhibit by Dr. C. M. Peterson and Clark D. Bridges of its council on industrial health.

Science News Letter, December 11, 1954

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## CHEMISTRY

## Earth's Temperature Mild When It Was Young

► THE EARTH was mild in temperature when it was extremely young and still growing.

Upsetting ideas that go back almost a century to Lord Kelvin, Dr. Harold C. Urey, Nobelist in chemistry at the University of Chicago, told the American Physical Society meeting in Chicago that the earth was not formed at high temperatures.

Instead of a fiery earth during its formation, Dr. Urey concludes from the elements now existing in the earth's crust that the accumulation of the materials which eventually formed the earth must have occurred at low temperatures.

The more volatile elements, such as mercury, arsenic, cadmium and zinc, have been retained in the earth's crust in about cosmic proportions. This could not have been the case had condensation occurred at high temperatures, such as 1,200 to 1,500 degrees Centigrade. They would have gone off in space.

"The formation of the earth was a complicated process," Dr. Urey declared, "and different temperatures existed at different times and in different regions."

With a hot earth at birth, all the iron should be present as a free, metallic element, as it is in meteorites. As it is, iron exists as oxides and sulfides as well.

Dr. Urey visualizes the loss of the great mass of the earth's original hydrogen, inert gases, most of its water, nitrogen, carbon as methane and some of the rocky silicate material when the earth was widely distributed in space.

After this, the earth accumulated out of planetesimals, little planets, some of them hundreds of miles across, but this was a sufficiently slow process not to raise the temperature very high.

Science News Letter, December 11, 1954

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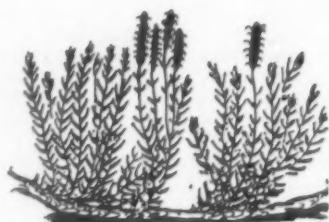


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Ground Pine

► IT LOVES to grow in the rich, mossy places, this curious little plant with its tiny, sharp-pointed green leaves, looking for all the world like an odd fairy pine tree. It is only a few inches tall, yet it has inordinately large cone-like fruit.

But the ground pine is not really pine. It is not even closely related to the common evergreen trees. It is more in the nature of a surviving great-great-granduncle, a black sheep in the family tree which gave rise to the conifers in dim ages long ago.

Ground pine is really a member of the fern family, belonging to that peculiar branch of the ferns known as the club-mosses. Its air of being a plant from another world is not entirely out of place, for it belongs by rights to the remote age when the world's coal was being made.

Then its ancestors were proud giants, standing yards high where ground pine now stands inches, with trunks several feet around and leaves a foot long. The kinds of trees we know today did not exist then, and these were the stuff of primal forests.

But times changed, new climates came in, and the tribe of seed-bearing plants arose. The early aristocrats, these dinosaurs of the plant world, could not hold on. Only the dwarfs and the fingerlings of the ground pine family escaped, surviving by hugging the forest floor.

With its taller neighbors in the winter woods, however, ground pine now shares the honors of Christmas pagantry and decoration. Christmas wreaths in the shop windows are built pretty largely on a foundation of this fine green stuff with its needle-like leaves.

Like the holly it often accompanies, ground pine has suffered because of man's holiday spirit. It has long been over-used, and wide areas that once produced it in quantity have been stripped bare for the Christmas markets. Only mountain tops and reaches of country remote from the roads still have it in quantity.

For ground pine is extremely difficult to transplant and cultivate. It was a king of the forests once; now it struggles to survive. It is almost as if it looks back to its days of glory, refusing to be tampered with by man, a recent and puny force compared to the great changes in weather which made it what it is.

Science News Letter, December 11, 1954

## MEDICINE

## Heart Beats Long After Breathing Stops

► THE CASE of a heart that went on beating for two hours and 40 minutes after its owner had completely stopped breathing is reported in the *Journal of the American Medical Association* (Nov. 27).

The patient was a 46-year-old man who had been under treatment for several years for high blood pressure and kidney disease. He was brought to the Bryn Mawr (Pa.) Hospital one morning almost unconscious from a massive brain hemorrhage. At 4:35 that afternoon his breathing suddenly stopped.

Because his heart was still beating, the intern gave artificial respiration for about ten minutes, followed by nikethamide, a stimulant drug. He had been getting oxygen through a tube into his nose at the rate of about 14 quarts a minute. This was continued. He never breathed again but his heart continued to beat until 7:15 that evening.

The case is reported by Dr. William Dale Beamer of Bala-Cynwyd, Pa.

Science News Letter, December 11, 1954

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## GENERAL SCIENCE

# Poor Spiritual Health

► THE DISEASE threatening the nation today is spiritual, not physical or mental, in the opinion of Dr. Julian P. Price of Florence, S. C.

Dr. Price, a member of the American Medical Association's board of trustees, called on American physicians to fight the spiritual disease afflicting the nation at the association's meeting in Miami, Fla.

Symptoms of this disease, he said, include "lackness of morals in our national government in recent years, the hold which organized vice has upon legislative and social life, increase in crime in our teen-age population, bribery and unethical conduct in amateur athletics, the mad search for pleasure which causes our people to spend four times as much for beverages as they do for religious and welfare activities."

Instead of antibiotics or other so-called wonder drugs, the treatment Dr. Price prescribes is a spiritual one.

"The only remedy which is of any avail—and to this history bears testimony—lies in a change of heart," he said. "It is my sincere belief that the greatest need of our

country today—and of our profession—is a spiritual rebirth, a return to God and to His eternal principles. And the rebirth must come in the heart of the average citizen—and in the average doctor of medicine."

He said some physicians tend to shy away from expressing their convictions publicly, and may be regarded by the public "as individuals of good moral character but men who are lukewarm toward religion itself."

"Our great need today is for every physician," he said, "to let his colleagues and the public know, in clear and unmistakable language, the principles for which he stands and the beliefs which he holds. Only in this way may we hope to set our feet on the road that leads to spiritual health."

He called upon his fellow physicians to combat the nation's spiritual sickness by taking part in government, devoting particular interest to public education, working with boys and girls, and charitable and philanthropic organizations, and having healthy, happy homes of their own.

Science News Letter, December 11, 1954

## GERONTOLOGY

# Chance of Living to 100

► THE CHANCE of living to 100 years is good for the person who can survive a reversal of biochemical and physical processes at ages 60 to 75, four New York Medical College doctors declared at the clinical meeting of the American Medical Association in Miami, Fla.

The doctors are A. A. Goldbloom, Otto Deutschberger, Irving Chapman and H. B. Eiber.

The aged who are surviving to 100 can be made more comfortable through the use of a combination of two new drugs, chlorpromazine and *Rauwolfia serpentina*, the doctors believe.

An intensive study of 1,000 old people whose ages ranged from 80 to 100 led the four doctors to the following conclusions:

1. Elevated blood pressure readings in the aged are not normal, and they can and should be controlled.

2. Cholesterol and phospholipid concentrations, fatty substances in the blood which contribute to hardening of the arteries, bore no relationship to age.

3. These substances, instead of continuing their anticipated rise, actually dropped after the age of 75.

4. Dilatation of the aorta, main artery of the body, was more frequent until the threshold period, then decreased.

5. The percentage increase of aortic calcification over the preceding decade also reversed itself during the threshold age.

In commenting on these findings, Dr. Eiber said:

"In other words, during the age period 60 to 75, which we refer to as the 'threshold age,' certain biochemical and physical processes reverse, and instead of continuing their upward trend, actually reverse and go down. What the mechanism of this threshold period is, has not been fully worked out, as yet. It is some invisible, not clearly understood barrier."

"Most of us die before reaching that barrier, or while going through it. But, once we get through, our chances of living to be 100 years are good."

Science News Letter, December 11, 1954

# Questions

ENGINEERING—How could rocket fuel be used to cool rockets of the future? p. 376.

□ □ □

GENERAL SCIENCE—On what theory are the Russians now attacking Nobelist Linus Pauling? p. 375.

What was the greeting on the first Christmas card? p. 378.

□ □ □

MEDICINE—What is lotio alba used for? p. 375.

□ □ □

NUTRITION—Why do the aged particularly need amino acids? p. 373.

□ □ □

PHYSICAL CHEMISTRY—How can atoms be used to time chemical reactions? p. 377.

□ □ □

PHYSICS—How can a meteorite's age be measured? p. 377.

□ □ □

PSYCHOLOGY—By what illusions can monkeys be fooled? p. 372.

□ □ □

VITAL STATISTICS—What are the chances that one of the parents of young children will die in a year? p. 374.

□ □ □

Photographs: Cover and p. 378, Fremont Davis; p. 371, New York University; p. 373, University of Michigan; p. 375, University of Tennessee; p. 384, Klug Engineering Service.

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**❁ SNOW BOOTS** made of tough, lightweight plastics can be washed inside as well as outside. Designed for children, they are available in red, white and brown. The flexibility of the plastics and a one-button fastener make it easy to peel them off without sitting down to do it.

Science News Letter, December 11, 1954

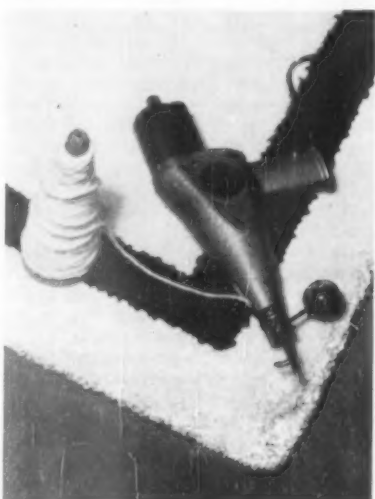
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Science News Letter, December 11, 1954

**❁ METALLIC YARNS** will be part of the automotive industry's upholstery this year, along with dresses of the same textile. Non-tarnishing and easily dry-cleaned, this metallic fabric is made by covering aluminum foil with a plastic laminate, that can be run on standard worsted or cotton looms as either warp or filling.

Science News Letter, December 11, 1954

**❁ RUG-MAKER, SHOWN** in the photograph, is designed for the do-it-yourself



homemaker. This model is operated by a push-button trigger control and works at 90 strokes per minute. Weaving one-inch high, a loop rug can be done to the individual's own taste and pattern.

Science News Letter, December 11, 1954

**❁ WATER-RESISTANT PAINTS** for interior walls have been tested to show their ability to stand up for added years against acids and alkalis. Available in a wide-range of color, they are based on a vinyl acetate resin latex.

Science News Letter, December 11, 1954

**❁ DRAWING PEN** with push-button, automatic feed will eliminate constant ink-well refilling and drying of the nibs. Designed along traditional lines, this ruling pen has an ink cartridge that holds the equivalent of 55,000 inches of ruled lines.

Science News Letter, December 11, 1954

**❁ THREE-WAY PORTABLE** radio allows optional choice of a battery-saving earphone, conventional loudspeaker, or use of both at once. Measuring only 8¼ by 5¼ by 2½ inches and weighing only three pounds and 11 ounces, this Japanese made portable is equipped with a "battery saver" circuit design.

Science News Letter, December 11, 1954

**❁ BLANKET FASTENERS** slide up and down on the crib bars and, at the same time, keep the baby's cover pulled up over him. They are made of shatterproof and chipproof plastic with a groove on one side to hold a safety pin. The molded rings snap easily onto the crib bars.

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Wind whistling over the wings and fuselage of planes at today's top military speeds is 10 to 12 times greater than any hurricane ever recorded.

In recent years, the population of chin-chillas in the U. S. has increased rapidly and is now estimated to be over 100,000.

The Navy has announced development of a rocket-carried parachute that opens automatically at high altitudes, providing an inexpensive target for guided missiles.

Studies of antibiotics as food preservatives for such products as hamburger, fish, shrimp and beef have shown good results in some cases.

12-11-4

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